A Research Proposal

On

Lifestyle and Well-being of Selected Cohort Age Ex-Sportsmen and Non Sportsmen in Relation to their Body Composition, Resting Metabolic Rate and Medical Health

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INTRODUCTION

In this complex world these days' healthful living and wellness is one of prime concern of every individual, group or organisation. The health of an individual is being taken care of, from many who are associated with the individual with love, work or any relation. The health quotient of a person determines one's efficiency to work in this increasingly complex environment, which is also being challenged by ever increasing diseases and social complexities of life.

The most common diseases prevalent in society, which are deteriorating the healthy life style of an individual, are due unchecked, which is leading to numerous mortal diseases like diabetes, hypertension, heart strokes, arthritis and so on many more.

So the body composition and metabolic rate is one of most important parameter to understand and diagnose for achieving a good Health. In the individual these parameters varies age to age, gender to gender and activity to activity. Body composition is the term used to describe the different components that, when taken together, make up a person's body weight. The human body is composed of a variety of different tissue types including lean tissues (muscle, bone, and organs) that are metabolically active, and fat (adipose) tissue that is not (Quinn, Elizabeth 2011).

The body fat percentage and muscle percentage is one of the most important considerations in human being to assess and maintain the health status of an individual especially medical health. So a person's body fat percentage is the total weight of the person's fat divided by the person's weight and consists of essential body fat and storage body fat. And body's muscle percentage is the total amount weight of the muscles divided by the person's weight.

Some regard the body fat percentage as the best measure of an individual's fitness level since it is the only body measurement which directly calculates the particular individual's body composition without regard to the individual's height or weight. The widely used body mass index (BMI) provides a measure that allows for the comparison of individuals of different heights in terms of their weight. Due to differences in body composition, the BMI is not necessarily an accurate indicator of body fat; for example, individuals with greater than average muscle mass will have a higher BMI. The thresholds defining the line between "normal", "overweight" and "obese" are sometimes disputed for this reason.

So it becomes important for an individual to know its body composition, so as to make any alterations in it to get a healthier body, which is not entirely based on total weight and height assessments, which can mislead a subject on alteration of its compositions. Involvement in Physical Activity and sports can help in leading, maintaining and altering the body composition parameters at any age which in turns helps in attaining a healthful living.

In addition with body composition, metabolism is one of the crucial parameter which could relatively lead to the change of body composition of an individual. Metabolism is the term used to describe how our body transforms energy (think burns calories) to be able to run all its functions to keep us alive. Our metabolic rate is the rate at which our body burns calories. Many people understand the metabolic-rate as being to be the major factor in how quickly, how easily they can lose weight (www.thehealthsuccesssite.com).

Metabolic Rate is the rate at which the body burns up calories. A body that consumes 2500 calories a day, and burns 2500 calories a day will stay at the same weight. A body consuming 2500 calories daily but burning only 2000 will gain weight at the rate of about 1lb a week (www.weightlossresources.co.uk).

Resting Metabolic Rate (RMR) is the amount of daily energy expended by humans and other animals at rest. The release, and using, of energy in this state is sufficient only for the functioning of the vital organs, the heart, lungs, nervous system, kidneys, liver, intestine, sex organs, muscles, and skin.

In the field anthropometry and sports physiology, lot of researches have been witnessed on the body composition of athletes and sedentary people. But in field of physical education and sports still the study's on ex-sportsmen is unidentified which can help in comparing and analysing the body composition and metabolic rate of athletes one's they retire from their professional arena. It is still a matter of concern that what sports contribute to the lives of athletes, one's they cease their sporty professional career and pursue their lives as non athletes' sedentary person. It will be interesting to know that to what level different sports could contribute to one's live in terms of body composition, metabolic rate and medical health one's an athlete retires and passes his life to ageing.

An ex-sportsman is a person who had regularly participated in sports in his professional career and pursues the sedentary life ones he retires. Where as a non sportsmen is a person who had never regular participated and involved in physical workout and exercise program. Health is a very broad term. It is true that not feeling sick is one important aspect of health. Just as important, however, is the idea that health is sense of optimum well-being a state of physical, mental, emotional, social and spiritual wellness. Contained in this view is the idea that health can be obtained by living in harmony with yourself, with other people, and with the environment. Health is gained and maintained by exerting self responsibility for reducing exposure to health risks and for maximizing good nutrition and exercise (Edlin & Golanty 2004).

Health like love or happiness, is a quality of life that is difficult to define and virtually impossible to measure. WHO has defined Health as:

Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity. Scientists and health educators have developed three main ways to define health:

The medical model

The environmental model

The wellness or holistic model

How you approach being healthy and well in many ways depends on your personal definition of health.

The Medical Model

The medical model's main tenet is that health is the absence of one or more of the five "Ds"- death, disease, discomfort, disability and Dissatisfaction. In other words, if you are not sick or dying, you are considered to be in the best attainable state of health. Within the medical model, the health of a population is measured in terms of vital statistics, which are data on the degree of illness (morbidity) and the number of deaths (mortality) in a given population. Vital statistics include prevalence and incidence. These statistical measurements allow comparisons between population and also within the same population overtime (Edlin & Golanty 2004).

The life style of an individual is an important factor in determining most of the related issues with individual like health and wellness state, so the life style can be defined as a way of living of individuals, families (households), and societies, which they manifest in coping with their physical, psychological, social, and economic environments on a day-to-day basis. Lifestyle is expressed in both work and leisure behavior patterns andin activities, attitudes, interests, opinions, value s,and allocation of income. It also reflects people's self image or self concept; the way they see themselves and believe they are seen by the others. Lifestyle is a composite of motivations, needs, and wants and is influenced by factors such as culture, family, reference groups, and social class. The lifestyle can be healthy or unhealthy based on your food choices,

activity level and behavior. A positive lifestyle can bring you happiness, while a negative lifestyle can lead to sadness, illness and depression.

In a 2009 issue of the "Journal of Physical Education, Recreation and Dance," Dr. Jeffrey Cherubini states that happiness refers to three paths or pursuits: the pleasant life, the engaged life and the meaningful life. When blended together, psychologists believe that happiness can be achieved. This newfound happiness can change your attitude and inspire you to make better decisions regarding your health and behaviour (Cherubin, Jeffrey 2009).

Exercise can be used as a gateway to achieving a positive lifestyle. Dr. Mark Anshel, author of "Applied Exercise Psychology" reveals that physique self-esteem is related to exercise participation. A higher physique self-esteem can lead to greater self-confidence and motivation to live a healthier lifestyle. Incorporate at least 20 minutes of exercise into your daily routine. Take a short walk in the neighborhood, attend an exercise class, or plan a hike with friends (Anshel, Mark 2006).

A 1998 issue of the "Journal of the American Medical Association" revealed that medical triggers tend to promote long-term behavior change in behavioral medicine. Take a proactive stance toward achieving a healthier lifestyle to avoid the medical consequences associated with a negative lifestyle. You have the power to control your life experience. Start today with small steps (Mitka,M. 1998).

A good life style leads to the accomplishment of happiness and wellness in life so achieving well-being has been the concern of philosophers since Aristotle, and is, in many respects the essence of human existence. In recent years, well-being has moved from the realm of philosophy to that of science. There has been a growing body of research into what contributes to the quality of people's experiences of their lives. This has enabled a new understanding of the factors that both influence and constitute well-being. Well-being describes our happiness, confidence, physical condition and general outlook on life. It is about feeling good

and taking care of yourself; responsibilities that can often be neglected when juggling the rigorous demands of everyday living in the 21st century.

Well-being and healthy living go hand-in-hand. Healthy living goes beyond eating a balanced diet, taking regular exercise and avoiding illness. It also reflects the mental, emotional and social aspects of an individual's life. The key aspects of healthy living can be broken down into the following elements. "Health is a state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity." WHO

Wellbeing is more than happiness and health. It's about having meaning in life and feeling that life is fulfilling and worthwhile. There are many aspects of wellbeing, including physical, emotional, social, financial and spiritual. Wellbeing is an ongoing process we need to work on at all times. Everything we do, think and feel has an impact on our health and wellbeing. The state of our wellbeing affects all aspects of our lives, including our health, productivity and relationships with others.

It is evident that a number of studies have been conducted on sedentary, athletes and veteran sports persons. But in today's complex world, still there is a need to identify to what levels does the sports participation can help an athlete when he retires and an ex-sportsmen passes on his old age. It will be also helpful to identify the contribution of different sports to what level they help in attuning wellness to their lives? So the study has been planned as lifestyle and well-being of selected cohort age ex-sportsmen and non sportsmen in relation to their body composition, resting metabolic rate and medical health.

Significance of the Study

The study will help in depicting the real and clear picture whether sports participation does have any significant effect in ageing or it's just a misconception. If yes, then the study will help in depicting, the level of

contribution by selected sports involvement in ex-sportsmen after a certain age group in terms of body composition, resting metabolic rate and medical health. In addition the study will reveal the health status parameters of the subjects, which will be certainly providing worth in making and prescribing the new ideology to ex-sportsmen and non sportsmen for the understanding of their physical fitness and health status, which as a result will help them in manipulating their present living style, achieving healthier body and wellbeing state.

Statement of the Problem

The purpose of the study is to analyse the body composition, resting metabolic rate and medical health of ex-sportsmen and non sportsmen of Northern plain regions of India. The study analogies on different parameters of body composition (such as fat percentage and muscle percentage) and resting metabolic rate. The study also finds the relationship of these variables with lifestyle and well-being. The medical health status parameter comprises of selected commonly prevalent diseases in the society. So the study has been stated as "Lifestyle and Well-being of selected Cohort Age Ex-sportsmen and Non Sportsmen in relation to their Body Composition, Resting Metabolic Rate and Medical Health".

Operational Definitions:

Fat Percentage: Fat percentage is the total weight of the person's fat divided by the person's weight and consists of essential body fat and storage body fat.

Muscle Percentage: Muscle percentage is the total amount weight of the muscles divided by the person's weight.

Resting Metabolic Rate (RMR): Resting Metabolic Rate is the amount of daily energy expended by humans and other animals at rest.

Cohort Age: Cohort age is a group of people who shares certain similar characteristics on the basis of certain age group.

Ex-sportsmen: An ex-sportsman is a person who had regularly participated in sports in his sports professional career and pursues the sedentary life ones he retires.

Non sportsmen: A non sportsmen is a person who had never regular participated and involved in physical workout and exercise program.

Medical Health: The medical health states to the absence of one or more of the five "Ds"- death, disease, discomfort, disability and Dissatisfaction. It is measured in terms of vital statistics, which are data on the degree of illness (morbidity) and the number of deaths (mortality) in a given population.

Lifestyle: A way of living of individuals, families (households), and societies, which they manifest in coping with their physical, psychological, social, and economic environments on a day-to-day basis.

Well-being: Well-being is state of more than happiness and health, which is attained by having meaning in life and feeling that life is fulfilling and worthwhile.

REVIEW OF LITERATURE

The investigator has attempted in following paragraphs to locate the literature related to this study. The relevant studies reviewed from various sources which the investigator has come across, has been cited below.

In a study of BMI and somatotype of 136 adult males (experimental group) in the age group of 30-40 years working in service and manufacturing sectors were measured by anthropometric method. Prediction equations for all the three somatotype component were developed from the regression analysis and found high correlation coefficients of BMI with endomorphy, mesomorphy, ectomorphy (Ghosh et al. 2009).

It has been revealed from the study that, many larger sized persons are indeed "overweight," they are not necessarily too fat and may not necessarily need to reduce. The total fat content of the football player was only 12.7% of his body weight compared with 15.0% body fat typically reported for young male non athletes. This player's body fat was below that normally found in the general population, even though he weighed much more than the average (Katch & McArdle 1973).

So it becomes important for an individual to know its body composition, so as to make any alterations in it to get a healthier body, which is not entirely based on total weight and height assessments, which can mislead a subject on alteration of its compositions. Involvement in Physical Activity and sports can help in leading, maintaining and altering the body composition parameters at any age which in turns helps in attaining a healthful living.

In a study conducted on 24 male volleyball players and 24 controls subjects revealed that volleyball players have significant greater values in percentage of lean body mass than the control groups i.e. mean values 62.34 kg 59.06 kg respectively. The lean body mass contributes relatively more to body weight than body fat in volleyball players. The training has resulted in the muscular development of volleyball players and in addition they had lesser amount of fat than the control groups which has been 12.52% and 16.25 respectively for both groups (Gaurv et. al. 2001).

The study on physique for men aged 17 to 59 years who jogged 3 days a week for 10 weeks. The average distance run by the end of 10 weeks was 84.4 km, or about 2.8 km or 1.7 miles a day. Body composition changes did occur but they were relatively small. Because lean body mass did not change , the decrease in body mass was due to a reduction in percent body fat from pre-test (18.9%) to post- test (17.8%) values, which represented a fat loss of 1.07 kg. The reduction in individual fat folds values paralleled the decrease in body fat (Wilmore et. al 1970).

Research shows the changes in body fat for three groups of men who trained walking and running for either 15, 30, or 45 minutes per workout. Also included are the distance run and the total duration of weekly workouts, training heart rate, body mass, the sum of fatfolds and waist girth. Compared to the control group, that remain unchanged over the 20 week training period, the three exercise groups significantly decreased their body fat, fatfolds, and waist girth. Body mass was also significantly lowered with exercise except for the 15 minute group whose mass remain stable. When comparisons were made between the three groups, the 45 minute training group lost a greater percentage of body fat then either the 30 or 15 minute exercise groups (Milesis et. al 1976).

In a 2 year calisthenics and jogging program the body composition of seven middle aged men was evaluated. Comparative data were also presented for six controls measured at the same 6 month intervals, but who did not take part in the exercise program. The exercises participated in a supervised program 3 days a week. Initially, they walked and jogged for 10 minutes; thereafter, they jogged for 30 to 35 minutes. The average distance covered increased from 2.4 to 12.1 km per week, and the total mileage run per subject after 2 years of training averaged 1188 km or 738 miles. Compared with control groups whose body composition remained relatively constant during the 2 year period, the exercises after the 1 year significantly reduced their body mass (5.7%), sum of fatfolds (27.4%), and girth measurements (3.1%). Thereafter, there was a little further change in body

mass and body composition. These finding show that calisthenics and jogging can significantly alter the physique of previously sedentary 40-60 year old men (Carter & Phillips 1969).

The research presents the results of a study of the body composition changes of the initially obese females who trained 3 days in a week for 8 weeks without modifying daily calorie intake. The exercise regimen consisted of an eight-station on routine performed on a multistation hydraulic apparatus. Subjects performed 3 sets of 10 repetition of bench press, inverse leg press, lateral-pull down, biceps curl, triceps extension, calf raise, leg extension, and hamstring curl. Strength evaluated by the 1-RM bench press, improve by 5.0 kg from 35 kg to 40 kg. Considering the relatively brief duration of training, there was an impressive 4.9% increase in biceps girth; this was more than likely due to the 6.0% increase in muscle plus bone cross-sectional area from radiographic examination of the upper arm and a corresponding decrease of 5.3% in the cross-sectional area for fat. Body Composition changed favourably: percent fat decreased by 1.2% fat units (-3.4%), Fat mass decreased by 0.6 kg (-2.3%), lean body mass increased by 1.1 kg or 2.3% (Ballor et. al 1988).

The resting metabolic rate varies between individuals. One study of 150 adults representative of the population in Scotland reported basal metabolic rates from as low as 1027 kcal per day (4301 kJ) to as high as 2499 kcal (10455 kJ); with a mean BMR of 1500 kcal (6279 kJ). Statistically, the researchers calculated that 62.3 % of this variation was explained by differences in fat free mass. Other factors explaining the variation included fat mass (6.7 %), age (1.7%), and experimental error including within-subject difference (2 %). The rest of the variation (26.7 %) was unexplained. This remaining difference was not explained by sex nor by differing tissue sized of highly energetic organs such as the brain (Johnstone et. al 2005).

A person's metabolism varies with their physical condition and activity. Weight training can have a longer impact on metabolism than aerobic training, but there are no known mathematical formulas that can exactly predict the length and duration of a raised metabolism from trophic changes with anabolic neuromuscular training. Thus there are differences in BMR even when comparing two subjects with the same lean body mass. The top 5% of people are metabolizing energy 28-32% faster than individuals with the lowest 5% BMR. For instance, one study reported an extreme case where two individuals with the same lean body mass of 43 kg had BMRs of 1075 kcal/day (4.5 MJ) and 1790 kcal/day (7.5 MJ). This difference of 715 kcal (67%) is equivalent to one of the individuals completing a 10 kilometer run every day (Speakman et. al 2004).

A decrease in food intake can lower the metabolic rate as the body tries to conserve energy. Researcher Gary Foster, Ph.D., estimates that a very low calorie diet of fewer than 800 calories a day would reduce the metabolic rate by more than 10 percent (Whitman 2003).

Frequent and regular aerobic exercise has been shown to help prevent or treat serious and life-threatening chronic conditions such as high blood pressure, obesity, heart disease, Type 2 diabetes, insomnia, and depression (Borer and et al.). Endurance exercise before meals lowers blood glucose more than the same exercise after meals (Silberner & Joanne 2010).

There is a direct relation between physical inactivity and cardiovascular mortality, and physical inactivity is an independent risk factor for the development of coronary artery disease. There is a dose-response relation between the amount of exercise performed from approximately 700 to 2000 kcal of energy expenditure per week and all-cause mortality and cardiovascular disease mortality in middle-aged and elderly populations. The greatest potential for reduced mortality is in the sedentary who become moderately active. Most beneficial effects of

physical activity on cardiovascular disease mortality can be attained through moderate-intensity activity (40% to 60% of maximal oxygen uptake, depending on age). Persons who modify their behaviour after myocardial infarction to include regular exercise have improved rates of survival. Persons who remain sedentary have the highest risk for all-cause and cardiovascular disease mortality (Fletcher, G. F. et al. (1996).

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OBJECTIVES

1. To investigate the differences in body composition, resting metabolic rate and medical health of selected ex-sportsmen within 30-40 years and 40-50 years age group.

2. To investigate the differences in body composition, resting metabolic rate and medical health of selected ex-sportsmen in both age groups.

3. To investigate the differences in body composition, resting metabolic rate and medical health of non sportsmen in both age groups.

4. To compare the body composition, resting metabolic rate and medical health of 30-40 and 40-50 years age group between ex-sportsmen and non sportsmen.

5. To find out the relationship of lifestyle with body composition, metabolic rate and medical health.

6. To find out the relationship of wellbeing with body composition, metabolic rate and medical health.

Hypotheses

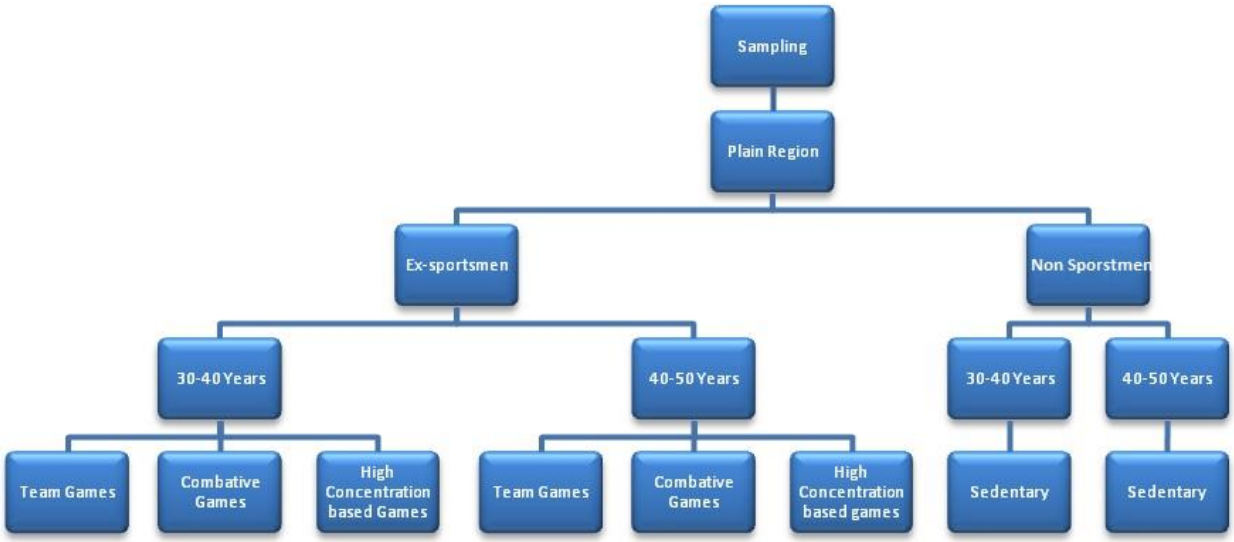
With the literature reviewed, experts advise and on the basis of scholar's own understanding following hypotheses are made:

- ❖ There exists no significant difference in body composition, resting metabolic rate and medical health of selected sports in 30-40 years age group.
- ❖ There exists no significant difference in body composition, resting metabolic rate and medical health of selected sports in 40-50 years age group.
- ❖ There will be a significant difference in body composition, resting metabolic rate and medical health of 30-40 years age group than 40-50 years age group in the category of selected ex- sportsmen.
- ❖ There will be a significant difference in body composition, metabolic rate and medical health of 30-40 years age group than 40-50 years age group in the category of non sportsmen.
- ❖ There exists no significant difference in body composition and resting metabolic and medical health of cohort age ex-sportsmen than non sportsmen in 30-40 years age group.
- ❖ There exists no significant difference in body composition and resting metabolic rate and medical health of cohort age ex-sportsmen than non sportsmen in 40-50 years age group.
- ❖ There will be a significant relationship of lifestyle with body composition, metabolic rate and medical health
- ❖ There will be no significant relationship of well-being with body composition, metabolic rate and medical health

PROPOSED METHODOLOGY

Sampling:

The study will project on the population of Northern Plain regions of India. The study will be conducted on 300 subjects and will be based on cluster sampling. Further for the better analysis on data collection, the subjects will be divided in ex-sportsmen and non sportsmen group both with 150 subjects each. Further ex-sportsmen group will be divided on the basis of selected sports category, for knowing the level of deviation among each sports category. The subjects on ex-sportsmen will be selected from physical education professional institutes, sports federations, coaching institutes and any other such physical activity organising body of North India(like NGOs). Non sportsmen will be also selected from similar Northern plain regions of India as of ex-sportsmen.



Limitations:

1. Diet and food habits of subjects
2. Body Type of subjects
3. Total work done by the subjects
4. Genetic or inherited background

Delimitation:

1. The study will be delimited to Team Games (football, hockey and cricket), Combative Games (wrestling, judo and boxing) and Highly Concentration/Accuracy based Games (archery, shooting and chess) within an age group of 30-40 and 40-50 years.

2. The study will be conducted on 300 subjects from North India, the ex-sportsmen who have played at least two state or National level competitions will be selected for the purpose of study.

3. The study will be delimited to following variables: In body composition (fat percent and muscle percent) and resting metabolic rate.

4. The study will be delimited to following selected diseases for collecting the data on medical health ground (arthritis, blood pressure, cancer, cardiac problems, diabetes, pulmonary diseases, renal diseases, strokes).

Tools for collection of data

The body composition and metabolic rate of the subjects will be taken with the help of Body Composition analyzer machine.

The medical health status of subjects will be compiled through the self made report on the basis of commonly prevalent diseases in society, which will be designed specifically to measure the spread of such diseases on medical health ground.

The lifestyle of the subjects will be measured by using Life Style Scale. developed by S. K. Bawa and S. Kaur .

The well-being of the subjects will be measured by using P. G. I. General Well-being Measure scale developed by S. K. Verma and Anita Verma.

Statistical Technique:

Mean and standard deviation will be calculated as the descriptive statistics. Correlation and ANOVA will be used as inferential statistics for analysing and interpretation of the data.

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